

INTERAGENCY GROUP
GEOTHERMAL/CABLE PERMITTING
Meeting on February 14, 1989

ROLL CALL:

The following were in attendance:

MEMBERS:

Chairperson, William W. Paty
Mr. Stan Arakaki, U.S. Army Corps of Engineers
Mr. William Meyer, U.S. Geological Survey
Mr. William Kramer, U.S. Fish and Wildlife Service
Mr. Doyle Gates, National Marine Fisheries Service
Mr. Bryan Harry, National Park Service
Mr. Charles Wegenroth, U.S. Coast Guard
Mr. Peter Garcia, State of Hawaii, Department of
Transportation
Mr. Douglas Tom, State of Hawaii, Office of State
Planning
Ms. Mary Lou Kobayashi, State of Hawaii, Office of
State Planning
Mr. James Ikeda, State of Hawaii, Department of
Health
Mr. Thomas Arizumi, State of Hawaii, Department of
Health
Mr. Denis Lau, State of Hawaii, Department of Health
Mr. Leslie Matsubara, State of Hawaii, Department of
Business & Economic Development
Mr. Gerald Lesperance, State of Hawaii, Department of
Business & Economic Development
Ms. Susan Labrenz, County of Hawaii
Mr. Ralph Masuda, County of Maui
Mr. Robin Foster, C&C of Honolulu, Department of
Land Utilization
Mr. Gary Okino, C&C of Honolulu, Department of
General Planning

STAFF:

Mr. Manabu Tagomori, State of Hawaii, Department of
Land and Natural Resources
Mr. Sus Ono, State of Hawaii, Department of Land and
Natural Resources
Mr. Dan Lum, State of Hawaii, Department of Land and
Natural Resources
Ms. Janet Swift, State of Hawaii, Department of Land
and Natural Resources
Ms. Maile Holt, State of Hawaii, Department of Land
and Natural Resources

OTHERS:

Mr. Arthur Seki, Hawaii Natural Energy Institute
Dr. Harry Olson, Hawaii Natural Energy Institute
Mr. Maurice Richard, ORMAT Energy Systems, Inc.
Mr. Rod Moss, True/Mid-Pacific Geothermal Venture
Dr. Don Thomas, Hawaii Institute of Geophysics

Interagency Group on Geothermal and Cable Development

Draft Minutes

Second Meeting, February 14, 1989
Department of Land and Natural Resources
Board Room
1151 Punchbowl Street
Honolulu, Hawaii 96813
10:00 a.m.

I. Opening Remarks

Mr. Manabu Tagomori opened the meeting at 10:00 a.m. for Mr. William Paty who was unavailable. Mr. Tagomori welcomed the attendees and asked them to introduce themselves. Mr. Tagomori summarized the work done by the group since its first meeting in September 1988. He said that the administrative rules for Act 301 would be going out to the group later in the week, and he requested comments on the rules before the next meeting. He mentioned that staff has now been hired and office space has been secured at the Gold Bond Building, Room 509. He said that the details on the office would be provided to the members.

II. Presentation on Current Geothermal Activities in Hawaii

Mr. Tagomori called on Dr. Harry Olson of the Hawaii Natural Energy Institute for a presentation on the slim holes project.

Dr. Olson indicated on a map the 6 experimental drilling sites for which his agency is currently seeking permits. Four holes are on the island of Hawaii, two are on the island of Maui. Dr. Olson said that the application for a Geothermal Resource Permit has been submitted to the County of Hawaii, and that there is a hearing scheduled for March 7, 1989 to consider that permit application.

Dr. Olson described the observation holes that his application proposes. There would be various size holes to various depths, using rigs with cores of different sizes and materials, until a depth of about 4,000 feet, more or less, is reached. That is the average depth for reaching the top of a reservoir area. Once the holes have reached the reservoir area, geophysical logs will be taken to monitor for temperature and pressure. The holes will be monitored for several years or until the holes cave in, at which time they would be abandoned by standard closing procedures. Dr. Olson said that initially he had hoped to start drilling in the spring of 1989, but there may be delays until September 1989.

Next, Mr. Tagomori called on Mr. Maurice Richard of Ormat Energy Systems, Inc. to discuss his company's proposals.

Mr. Richard said that for background, Ormat acquired Puna Geothermal Venture in July 1988, which essentially comprised an Environmental Impact Statement, three wells in Puna, and a lease and energy contract for 25 MW of power. He said that his firm has made efforts to improve the approaches to the project. In December he said he submitted an application to the County of Hawaii, and is now in the process of working out details regarding form, content and wording of the application. In mid December, a plan of operations was submitted to the Department of Land and Natural Resources. He said an "authority to construct" for the well field and for the plant would be available within the next two weeks.

Mr. Richard then presented a video tape on Ormat's technology and various successful projects in Utah and Nevada. After the video presentation Mr. Richard presented diagrams of how the technology would be modified for application in Hawaii, using back pressure turbines that work like a windmill, to extract a certain amount of heat, since Hawaii's is one of the hottest geothermal resources in the world.

Several technical questions followed Mr. Richard's presentation. Mr. Kaya asked about differences between Ormat's approach considering information from the existing HGFA plant, and Dr. Olson's research. Mr. Kaya's concern was about injecting brine, which is a different method from that used at HGFA where the liquid is steamed. Mr. Richard said the liquid would be recombined and reinjected.

Someone asked Mr. Richard if his project would have corrosion inhibitors and he answered no. Another question was what per cent of electricity generated would be from non-turbine methods and what per cent from the regular method. Mr. Richard said there would be 10 back pressure turbines and 10 "EOC's", which would net 25 MW and gross between 28 and 30 MW of power.

Mr. Kaya asked Mr. Richard to compare his operation with the steam flash unit which produces 14 lbs of steam per kw hour. Mr. Richard said there would be air cooling and therefore there would be no plume like that produced by the HGFA plant.

Mr. Tagomori asked if Mr. Richard's plan calls for using any of the Kapoho holes. Mr. Richard said they are looking at KS2 and think they can recover KS2. He added that usually the least productive well is your injection well. He said he is proposing 6 well pads, but it doesn't mean they will all be used.

Next, Mr. Tagomori called on Mr. Rod Moss of True Mid-Pacific Geothermal Venture. He gave a history of his firm's involvement in the geothermal area in Hawaii. He gave a slide presentation on locations and permits. He said his project could commence in four months after the permits are received.

Mr. Kaya asked Mr. Moss how much money his firm must invest before they can actually start selling 25 MW of electricity. Mr. Moss said about \$45 million. He said that each well costs about two and a half million dollars, so the expense will be between fourteen and fifteen million dollars just for the wells. Mr. Kaya commented that he just wanted people to be aware of the size of the investment we are talking about in these projects.

Mr. Tagomori brought up the subject of the recent Request for Proposals (RFP) by Hawaiian Electric Company for a combined State and HECO geothermal and cable project. He called on Mr. Jerry Lesperance to provide some information. Mr. Lesperance said that the goal is 1990 to go ahead with the 500 MW project including the cable. He said the RFP is being developed by the Department of Business and Economic Development and will go out in May 1989. The estimated cost of the project is \$1.7 billion.

Mr. Kaya asked about economics of scale, whether more power is better for the development companies. Mr. Moss said that because of the economy of scale, it would be better to develop 500 MW. Mr. Richard said that his firm wants to participate in the development of the proposed 500 MW of power, but wants to learn from the installation of the 25 MW plant first.

Mr. Tagomori mentioned the bill before the legislature currently on the geothermal corridor. He said the Department would be monitoring the status of the bill and would keep the Interagency Group informed.

III. Status Report on the Implementation of Act 301

Mr. Tagomori then called on Mr. Dan Lum of the Division of Water and Land Development to update the group on the progress made in implementing Act 301.

Mr. Lum summarized the intent of Act 301, to provide a consolidated permitting process for geothermal and cable projects. He said that the agencies have cooperated by sending in copies of their respective permitting rules and regulations and permit application forms. The 301 staff has had a chance to identify what permits may be required for various projects, and to study and learn the permitting requirements. The administrative rules are in final draft, and will be distributed to the Interagency Group for their review within the week. Staff has been hired, and office space for the 301 process is being prepared for occupancy. Items are being assembled for the information center function of Act 301, and for the repository for all geothermal and cable information.

Mr. Tagomori said that a copy of Act 301 will be included in the mailing with the draft administrative rules. He asked that the agencies send in their comments to the administrative rules draft.

IV. Future Meeting Date

Mr. Tagomori called for the next meeting of the Interagency Group to be held March 14, 1989, at the same time and location.

V. Other Business

Mr. Tagomori called on the various County representatives to comment on their activities in the area of geothermal permitting. Mr. Ralph Masuda of Maui County said that the draft rules for Geothermal Resource Permits have been prepared, and that there would be a public hearing on the rules at the end of May. He said hopefully the rules would be adopted in July or August.

Mrs. Susan Labrenz, Managing Director of Hawaii County, commented that Hawaii County officials may be perceived to be cautious in the geothermal area, but she said it is because the County wants to do the project right the first time, and is looking for a good track record.

Mr. Jerry Lesperance said there is an environmental assessment on the 500 MW cable being reviewed in draft at the Department of Business and Economic Development, and it should be ready for publication in March 1989.

Mr. Paty returned from hearings at the legislature and urged the group to push on in working out the consolidated permitting process, because all involved are on a tight time schedule. He said it is this group that can make the geothermal project happen, but the timing is very important.

Mr. Tagomori said that the schedule calls for the administrative rules to be ready around the fourth of July. He closed the meeting on that note, and with a reminder that the next meeting will be on March 14, 1989, same time of day and the same location.